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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,797	10/16/2003	Sung-Hoon Lee	030681-575	5138

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EXAMINER

BELL, BRUCE F

ART UNIT	PAPER NUMBER
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1745

MAIL DATE	DELIVERY MODE
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08/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/685,797

Applicant(s)

LEE ET AL.

Examiner

Bruce F. Bell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4,13,15-17,19 and 22-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 4,13,15-17,19 and 22-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 4, 13, 16, 17, 22-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Hagemeyer et al (6603038).

Hagemeyer et al disclose producing catalyst containing metal nanoparticles on a porous support. See title. The porous support is preferably nanoporous to which at least one precursor has been applied and is treated with at least one reduction agent, to obtain the metal nanoparticles produced in situ in the pores of the support. See abstract and col. 4, lines 49-52. Support materials are essentially inert and may be made from materials such as silicon dioxide, aluminum oxide, titanium dioxide, zirconium dioxide as well as other oxide compounds. See col. 6, lines 4-8. One or more compounds of metals selected from copper, silver, gold, nickel, palladium and platinum made be applied to the support. See col. 7, lines 31-38. The porous support is treated with at least one precursor which is applied along with at least one reducing agent to give nanosize metal particles and/or alloy particles produced in situ in the pores of the support. See col. 7, lines 49-54. Reducing agents such as alkali metal borohydrides of

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either sodium or potassium can be used. See col. 7, lines 58-67. The solution of the metal compounds is applied to the porous supports for example by impregnating. See col. 8, lines 15-22. The support can, before, during and after the in-situ generation of the nanosized particles, be loaded with further promoters such as Zr, Cd, and Cu. See col. 11, lines 6-18.

The prior art of Hagemeyer et al anticipates the applicants instant invention as shown by way of the disclosure to Hagemeyer et al above. Hagemeyer uses the same method of insitu impregnation of the metal precursors to form the alloy nanoparticles as set forth in applicants instant specification and shows in particular that Pd and Cd are used as one of the alloys and that further the compounds can be formed insitu and then promoters of Zr, Ti, Cd, Cu, and Ba can be added after, before or during the application of the precursors and/or the reduction, which means that many different alloy nanoparticles such as those in the instant claims may be obtained within the porous support. The recitations in the dependent claims based on the hydrogen binding energy and oxygen binding energy appear to have been met by virtue of the same materials being used for the alloy catalyst, absent evidence to the contrary. Therefore, the prior art of Hagemeyer et al anticipates the applicants instant claims as set forth.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagemeyer et al in combination with Abdo et al (6573214).

Hagemeyer et al is as disclosed above in the 35 USC 102 rejection.

Hagemeyer et al does not teach that the support is carbon, graphite, mesoporous carbon powder or carbon nanotubes.

Abdo discloses that the porous support used with a catalyst that is impregnated into the support may be one of carbon, aluminum oxide, zirconium dioxide, silicon dioxide and titanium dioxide. See col. 5, line 57 – col. 6, line 26. The patent further sets forth the use of precursors of the catalyst being impregnated into the support. See col. 7, lines 62-67.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention was made because even though the prior art of Hagemeyer et al does not disclose the use of carbon, the prior art of Abdo shows that it is conventional in the art to use various materials as the support for a catalyst and that carbon is known to be used with catalysts in fuel cell applications. Therefore, one having ordinary skill in the art would have the ability to use various supports based on the application in which the supported catalyst will be used. Therefore, the prior art of Hagemeyer et al in combination with Abdo render the applicants instant invention as obvious for the reasons set forth above.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 4, 13, , 16, 17, 22-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Bertsch-Frank et al (2001/0024634).

Bertsch-Frank et al disclose catalyst particles of platinum and silver in alloyed form that are impregnated into a customary catalytic carrier. See paragraphs 0016, 0017, 0019, 0020.

The prior art of Bertsch-Frank et al anticipates the applicants instant invention since an alloy of PtAg is shown being impregnated into a porous carrier insitu. The recitation in the dependent claims, with respect to, the hydrogen and oxygen binding force and energy's, is met by virtue of the same alloy being used as set forth in applicants instant invention, absent evidence to the contrary.

Response to Arguments

7. Applicant's arguments with respect to claims 4, 13, 15-17, 19, 22-25 have been considered but are moot in view of the new ground(s) of rejection.

The examiner in charge of this application would like to apologize for indicating allowable subject matter, but in a subsequent search by the examiner the above prior art was found which is pertinent to the instant claims as set forth.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce F. Bell whose telephone number is 571-272-1296. The examiner can normally be reached on Monday-Friday 6:30 AM - 3:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BFB
August 8, 2007


Bruce F. Bell
Primary Examiner
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